IN THE CLAIMS

Please amend the claims as follows:

Claims 1-19 (Canceled).

Claim 20 (Currently Amended): A method of detecting a motion vector comprising:

(a) extracting, from a (m+k)-th frame assumed between a m-th frame (m is an integer) of an image formed of a plurality of pixels and a (m+n)-th frame (n is an integer not less than k + 1, k is a real number), a plurality of first blocks produced by dividing the (m+k)-th frame and each having a given size and a ~~give~~ given shape;

(b) extracting a plurality of second blocks ~~each having the same size and shape as corresponding~~ identical in size and shape to the first blocks from the m-th frame;

(c) obtaining first motion vectors between said first blocks and said second blocks;

(d) calculating second motion vectors which are -(n-k)/k of the first motion vectors;

(e) extracting, from the (m+n)-th frame, third blocks corresponding to destinations of the first blocks according to the second motion vectors;

(f) obtaining each first absolute difference ~~values~~ value between ~~each of~~ opposite pixels of the second blocks and the third blocks;

(g) counting pixels having the first absolute difference value not more than a first threshold to obtain first count values ~~for pairs of the second blocks and the third blocks~~;

(h) extracting a first pair of blocks each containing pixels for which the first count value becomes maximum, ~~respectively,~~ from ~~the pairs of~~ the second blocks and the third blocks to obtain a vector between the first pair of blocks as a motion vector for every first region between the m-th frame and the (m+n)-th frame; ~~and~~

~~obtaining as a motion vector between the m-th frame and the (m+n)-th frame a vector between the pair of blocks for which the count value becomes maximum.~~

(i) extracting pixels in the second blocks for which the first absolute difference value is not more than a second threshold as pixel blocks of the first region ;

(j) extracting pixels in the second blocks for which the first absolute difference value is more than the second threshold as pixel blocks of a second region;

(k) extracting fourth blocks identical in size and shape to the pixel blocks of the second region from the (m+n)-th frame;

(l) obtaining each second absolute difference value between opposite pixels of the pixel blocks of the second region and the fourth blocks;

(m) counting pixels having the second absolute difference value not more than a third threshold to obtain second count values; and

(n) extracting a second pair of blocks each including pixels for which the second count value becomes maximum from the pixel blocks of the second region and the fourth blocks to obtain a vector between the second pair of blocks as a motion vector for every second region between the second region and the (m+n)-th frame.

Claim 21 (Canceled).

Claim 22 (New): The method according to claim 20, wherein the second blocks, the third blocks and the fourth blocks have luminance information and color difference information,

the step (f) obtains the first absolute difference value between every opposite pixels of luminance blocks having the luminance information of the second blocks and luminance blocks having the luminance information of the third blocks,

the step (i) obtains the second absolute difference value between every opposite pixels of color difference blocks having the color difference information of the second blocks and color difference blocks having the color difference information of the third blocks, and extracts pixels in the second block for which the second absolute difference value is not more than a second threshold as the pixel blocks of the first region, and

the step (l) obtains the third absolute difference value between every opposite pixels of the luminance blocks having the luminance information of the second region and the luminance blocks having the luminance information of the fourth blocks.

Claim 23 (New): A motion vector detecting method comprising:

(a) extracting, from a (m+k)-th frame assumed between a m-th frame (m indicates an integer) of an image formed of a plurality of pixels and a (m+n)-th frame (n is an integer not less than k+1, k is a real number), a plurality of first blocks produced by dividing the (m+k)-th frame and each having a given size and a give shape;

(b) extracting a plurality of second blocks identical in size and shape to the first blocks from the m-th frame;

(c) obtaining first motion vectors between the first blocks and the second blocks;

(d) calculating second motion vectors which are -(n-k)/k of the first motion vectors;

(e) extracting, from the (m+n)-th frame, third blocks corresponding to destinations of the first blocks according to the second motion vectors;

(f) obtaining each first absolute difference value between opposite pixels of the second blocks and the third blocks;

(g) counting pixels having the first absolute difference value not more than a first threshold to obtain first count values

(h) extracting a first pair of blocks each containing pixels for which the first count value is maximum from the second blocks and the third blocks to obtain a vector between the first pair of blocks as a motion vector for every first region between the m-th frame and the (m+n)-th frame;

(i) extracting pixels in the second blocks for which the first absolute difference value is not more than a second threshold as pixels of the first region ;

(j) extracting pixels in the second block for which the first absolute difference value is more than a second threshold as pixel blocks of a second region;

(k) extracting, from the (m+n)-th frame, a pixel block of a second spatial expansion region identical in size and shape to a first spatial expansion region connecting adjacent second regions in the second blocks spatially to each other;

(l) obtaining each second absolute difference value between opposite pixels of the pixel blocks of the first spatial expansion region and the pixel blocks of the second spatial expansion region;

(m) counting pixels having the second absolute difference value not more than a third threshold to obtain second count values; and

(n) extracting a second pair of blocks each including pixels for which the second count value is maximum from the first spatial expansion region and the second spatial expansion region to obtain a vector between the second pair of blocks as a motion vector for every second region between the first spatial expansion region and the (m+n)-th frame.

Claim 24 (New): A frame interpolation picture creating method for creating an interpolation picture to be interpolated at a temporal position of a (m+k)-th frame (k is an arbitrary real number) between a m-th frame (m is an arbitrary integer) of an original picture and a (m+n)-th frame (n is an integer not more than 1), the method comprising:

(a) scaling the motion vector for every first region, which is obtained by the motion vector detecting method of any one of claims 20, 22 and 23, according to the temporal position of the (m+k)-th frame,

(b) extracting, from the (m+n)-th frame, fifth blocks corresponding to destinations of an interpolation block for every first region on the (m+k)-th frame which spatially colocates a pixel block of the first region on the m-th frame, according to the motion vector for every first region after scaling;

(c) assigning the fifth block to the interpolation block of the (m+k)-th frame for every region;

(d) scaling the motion vector for every second region obtained by the motion vector detection method of any one of claims 20, 22 and 23 according to a temporal position of the (m+k)-th frame;

(e) extracting, from the (m+n)-th frame, sixth blocks corresponding to destinations of an interpolation block for every second region on the (m+k)-th frame which spatially colocates a pixel block of the second region on the m-th frame, according to a motion vector according to the motion vector for every second region after scaling; and

(f) assigning the sixth block to the interpolation block of the (m+k)-th frame for every region.

Claim 25 (New): A motion vector detecting apparatus, comprising:

an extractor to extract, from a (m+k)-th frame assumed between a m-th frame (m indicates an integer) of an image formed of a plurality of pixels and a (m+n)-th frame (n is an integer not less than k + 1, k is a real number), a plurality of first blocks produced by dividing the (m+k)-th frame and each having a given size and a give shape;

an extractor to extract a plurality of second blocks identical in size and shape to the first blocks from the m-th frame;

an obtaining unit to obtain first motion vectors between the first blocks and the second blocks;

a calculator to calculate second motion vectors which are -(n-k)/k of the first motion vectors;

an extractor to extract, from the (m+n)-th frame, third blocks corresponding to destinations of the first blocks according to the second motion vectors;

an obtaining unit to obtain each first absolute difference value between opposite pixels of the second blocks and the third blocks;

a counter to count pixels having the first absolute difference value not more than a first threshold to obtain first count values;

an extractor to extract a first pair of blocks each containing pixels for which the first count value is maximum from the second blocks and the third blocks to obtain a vector between the first pair of blocks as a motion vector for every first region between the m-th frame and the (m+n)-th frame;

an extractor to extract pixels in the second blocks for which the first absolute difference value is not more than a second threshold as pixels of the first region ;

an extractor to extract pixels in the second block for which the first absolute difference value is not more than a second threshold as a pixel block of a second region;

an extractor to extract fourth blocks identical in size and shape to the pixel block of the second region from the (m+n)-th frame;

an obtaining unit to obtain each second absolute difference value between opposite pixels of the pixel blocks of the second region and the fourth blocks;

a counter to count pixels having the second absolute difference value not more than a third threshold to obtain second count values; and

an extractor to extract a second pair of blocks each including pixels for which the second count value becomes maximum from the pixel blocks of the second region and the fourth blocks to obtain a vector between the second pair of blocks as a motion vector for every second region between the second region and the (m+n)-th frame.

Claim 26 (New): The apparatus according to claim 25, wherein the second blocks, the third blocks and the fourth blocks have luminance information and color difference information,

the obtaining unit (f) obtains the first absolute difference value between every opposite pixels of luminance blocks having the luminance information of the second blocks and luminance blocks having the luminance information of the third blocks,

the obtaining unit (i) obtains the second absolute difference value between every opposite pixels of color difference blocks having the color difference information of the second blocks and color difference blocks having the color difference information of the third blocks, and extracts pixels in the second block for which the second absolute difference value is not more than the second threshold as pixel blocks of the first region, and

the obtaining unit (l) obtains the third absolute difference value between every opposite pixels of the luminance blocks having the luminance information of the second region and the luminance blocks having the luminance information of the fourth blocks.

Claim 27 (New): A motion vector detecting apparatus comprising:

an extractor (a) to extract, from a (m+k)-th frame assumed between a m-th frame (m indicates an integer) of an image formed of a plurality of pixels and a (m+n)-th frame (n is an

integer not less than k+1, k is a real number), a plurality of first blocks produced by dividing the (m+k)-th frame and each having a given size and a give shape;

an extractor (b) to extract a plurality of second blocks identical in size and shape to the first blocks from the m-th frame;

an obtaining unit (c) to obtain first motion vectors between the first blocks and the second blocks;

a calculator (d) to calculate second motion vectors which are -(n-k)/k of the first motion vectors;

an extractor (e) to extract, from the (m+n)-th frame, third blocks corresponding to destinations of the first blocks according to the second motion vectors;

an obtaining unit (f) to obtain each first absolute difference value between opposite pixels of the second blocks and the third blocks;

a counter (g) to count pixels having the first absolute difference value not more than a first threshold to obtain first count values

an extractor (h) to extract a first pair of blocks each containing pixels for which the first count value is maximum from the second blocks and the third blocks to obtain a vector between the first pair of blocks as a motion vector for every first region between the m-th frame and the (m+n)-th frame;

an extractor (i) to extract pixels in the second blocks for which the first absolute difference value is not more than a second threshold as pixels of the first region ;

an extractor (j) to extract pixels in the second block for which the first absolute difference value is more than a second threshold as a pixel block of a second region;

an extractor (k) to extract, from the (m+n)-th frame, a pixel block of a second spatial expansion region identical in size and shape to a first spatial expansion region connecting adjacent second regions in the second blocks spatially to each other;

an obtaining unit (l) to obtain each second absolute difference value between opposite pixels of the pixel blocks of the first spatial expansion region and the pixel blocks of the second spatial expansion region;

a counter (m) to count pixels having the second absolute difference value not more than a third threshold to obtain second count values; and

an extractor (n) to extract a second pair of blocks each including pixels for which the second count value is maximum from the first spatial expansion region and the second spatial expansion region to obtain a vector between the second pair of blocks as a motion vector for every second region between the first spatial expansion region and the (m+n)-th frame.

Claim 28 (New): A frame interpolation picture creating apparatus of creating an interpolation picture to be interpolated at a temporal position of a (m+k)-th frame (k is an arbitrary real number) between a m-th frame (m is an arbitrary integer) of an original picture and a (m+n)-th frame (n is an integer not more than 1),

(a) a scaler to scale the motion vector for every first region, which is obtained by the motion vector detection method of any one of claims 25, 26 and 27, according to the temporal position of the (m+k)-th frame,

(b) an extractor to extract, from the (m+n)-th frame, fifth blocks corresponding to destinations of an interpolation block for every first region on the (m+k)-th frame which spatially colocates a pixel block of the first region on the m-th frame, according to the motion vector for every first region after scaling

(c) an assigning unit to assign the fifth block to the interpolation block of the (m+k)-th frame for every region,

(d) a scaler to scale the motion vector for every second region obtained by the motion vector detection method of any one of claims 25, 26 and 27 according to a temporal position of the (m+k)-th frame,

(e) an extractor to extract, from the (m+n)-th frame, sixth blocks corresponding to destinations of an interpolation block for every second region on the (m+k)-th frame which spatially colocates a pixel block of the second region on the m-th frame, according to the motion vector for every second region after scaling; and

(f) an assigning unit to assign the sixth block to the interpolation block of the (m+k)-th frame for every region.